Notes

- Corrections applying Reasonably Available Control Technology (RACT) for these areas are due 6 months after enactment [Section 182(a)(2)(A)]. States with existing ozone nonattainment areas have to submit SIP revisions within six months of enactment to correct or add requirements concerning RACT that were mandated under section 172(b) of the CAA before the new Amendments. EPA has issued guidance concerning the RACT requirements of the prior law in several documents, principally:

  - Control Technique Guidance (CTG's).

  - Interpretations on applicability of CTG's and RACT by type of nonattainment area as summarized in 52 Fed. Reg. 45044 (November 24, 1987), note especially pp. 45068-69.

  - EPA 1988 and 1990 SIP calls, and the Bluebook referred to in the SIP calls.

- Immediately upon enactment, all areas that already contain, or were required by the 1977 Act to have contained, a basic inspection/maintenance (I/M) program, must either upgrade the program to meet all of EPA's previous guidance on basic I/M programs or retain the program now in the plan, if the existing one is the more stringent [Section 182(a)(2)(B)].

- o A periodic inventory of emissions is due after each 3-year period until the area is redesignated to attainment [Section 182(a)(3)(A)].

- o Revisions of SIP's requiring emissions statements are due two years after enactment. Annual emissions statements are due from specified sources beginning three years after enactment. A procedure is specified for a state to waive the emissions statement requirement for smaller sources [Section 182(a)(3)(B)].

- o Marginal areas are not subject to the requirement of attainment demonstration or contingency measures [Section 182(a)].

d. Moderate Areas: Additional SIP Submission Requirements

- o 15% Reduction Requirement

  - Within three years of enactment, states must submit a SIP revision to provide for 15% VOC reductions [Section 182(b)(1)(A)(i)].

  - Annual reductions of VOC and Nitrogen Oxides (NO_x) as necessary to attain standard are also required, except that NO_x reductions can be waived [Section 182(b)(1)(A)(i)].

  - A waiver from 15% amount allowed under certain circumstances [Section 182(b)(1)(A)(ii)].

Notes

- The 15% reduction must be computed from a specified baseline figure [Section 182(b)(1)(B)].

- All emission reductions are creditable towards the 15% amount, except for certain specifically exempted reductions [Section 182(b)(1)(C)-(D)].

o Reasonably Available Control Technology (RACT)

- SIP revisions requiring RACT for all sources covered by a pre-enactment CTG (even if the CTG had not previously applied in that type of nonattainment area) must be completed within two years of enactment [Section 182(b)(2)(B)].

- SIP revisions must be completed within two years of enactment to require RACT for all major sources (even if the sources are not covered by a CTG) [Section 182(b)(2)(C)].

- A SIP revision must be completed to apply RACT to sources covered by any new CTG's that EPA issues after enactment of the 1990 Amendments within the time period set forth when the CTG is issued [Section 182(b)(2)(A)].

- Definition of major source: 100 TPY under Section 302(j).

Notes

- Within four years after enactment, the state must submit SIP measures and attainment demonstration based on photochemical modeling [Section 182(c)(2)(A)].

- Within four years after enactment, the state must submit SIP measures and demonstration to show that the plan will lead to 3% progress each year, averaged over three-year periods beginning six years after enactment [Section 182(c)(2)(B)].

  A waiver from the 3% rule described above is available under certain circumstances [Section 182(c)(2)(B)].

  NO_x control may be substituted for VOC control [Section 182(c)(2)(C)].

o Vehicular Requirements

- Within two years of enactment, all urbanized areas with a 1980 population of 200,000 or more must adopt enhanced I/M programs consistent with EPA guidance. These programs must include computerized emission analyzers, certain waiver restrictions, enforcement through vehicle registration denial, and generally, annual centralized testing and inspection [Section 182(c)(3)].

- Specified serious ozone areas are required to adopt SIP

provisions implementing the clean fuels vehicle program prescribed in Title II [Section 182(c)(4)]. However, the program prescribed in Title II was significantly altered in the conference committee without corresponding changes being made to Title I. Based on the legislative history, it is clear from the level of attention paid to the respective provisions that the requirements in Title II should prevail. Therefore, EPA will require states to make the submissions required by Title II with respect to clean fuel vehicles.

- All areas with a 1980 population of 250,000 or more must adopt clean-fuel vehicle fleet programs within 42 months of enactment. These programs must require that a statutorily mandated percentage of fleet vehicles be clean-fuel vehicles and operate on clean fuels within the area, begining with vehicle models for the year 1998. Light-duty fleet vehicles must also meet the Title II clean-fuel vehicle standards for model year 2001, if available. The programs must require fuel providers to make clean fuels available. The programs must provide for trading and banking of compliance credits, and must provide for the waiver of certain transportation control measures [Sections 182(c)(4) and 246)].

Notes

- Within two years of enactment, California must require that sufficient clean alternative fuel be produced and distributed within the state to support the Title II mandatory clean-fuel vehicle pilot program. Begining in model year 1996, the state must provide for sufficent fuel to allow all clean-fuel vehicles required by the pilot program to operate, to the maximum extent possible, on clean alternative fuels within the state. The state can provide for trading of compliance credits and can prescribe health and safety and vehicle performance specifications [Section 182(c)(4) and 249(c)].

- Any area may opt-in to the California clean-fuel vehicle pilot program by providing incentives for the sale and use of clean-fuel vehicles and clean alternative fuels. The incentives may include a registration fee on non-clean-fuel vehicles, provisions to exempt clean-fuel vehicles from certain transportation controls, or preferential parking for clean-fuel vehicles. Incentives may not include any production or sales mandate for clean-fuel vehicles or clean alternative fuels, and may not apply to fleet vehicles covered by the clean-fuel vehicle fleet program [Sections 182(c)(4) and 249(f)].

Notes

- All areas must submit triennial demonstrations to show that vehicle miles travelled, vehicle emissions, and congestion levels are consistent with those projected in the SIP. The first such demonstration is due six years after enactment. If levels are not consistent, the state must develop a transportation control program to reduce emission levels to those consistent with the attainment demonstration within eighteen months. These programs must consist, at a minimum, of measures selected from section 108(f), must ensure adequate access to areas of high concentration without relocating emissions and congestion, and must be developed in accordance with the guidance of the Administrator. Guidance is to be issued within six months of enactment [Section 182(c)(5)].

o Other Requirements

- A "Major" source is defined as one emitting 50 TPY or higher. (See discussion above for general RACT and new-source review requirements for major sources) [Section 182(c) (introductory language)]

- EPA must publish r[illegible] enhanced monitorin[illegible] must then implement a based on those rules [Section 182(c)(1)].

Notes

- Contingency provisions [Section 182(c)(9)].

f. Severe Areas: Additional SIP Submission Requirements

o Vehicular Requirements

- All areas must adopt enforceable transportation control measures within two years of enactment to offset any growth in vehicle miles traveled and numbers of vehicle trips, and to achieve reductions in mobile source emissions as necessary to comply with the periodic emission reduction requirements of the Act. States should choose from measures listed in Section 108(f) and should ensure adequate access to areas of high population. The state should avoid measures that increase or relocate, rather than reduce, emissions and congestion [Section 182(d)(1)(A)].

- Areas rated severe must adopt employer trip reduction programs to reduce work-related travel. Under the area program, employers of 100 or more employees must implement programs to increase average passenger occupancy per commuting vehicle during rush hours by at least 25% above the average vehicle occupancy rate in the area. Programs must be consistent with EPA guidance, which may specify average occupancy rates for

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Notes

- Electric utility and industrial and commercial boilers that emit 25 TPY of NO_x will be required to use clean fuel or advanced control technology eight years after enactment of the amendments [Section 182(e)(3)].

- SIP's are authorized to establish traffic control measures to reduce the use of high polluting vehicles during heavy traffic hours [Section 182(e)(4)].

- Under certain circumstances and in accordance with a specified schedule, EPA is authorized to approve a state attainment demonstration that is based on anticipated new technologies [Section 182(e)(5)].

h. NO_x Requirements

- SIP requirements for major VOC sources (RACT and NSR) also apply to major NO_x sources [Section 182(f)(1)].

- SIP requirements for NO_x sources (RACT and NSR) are <u>not</u> applicable if EPA determines that the air quality benefits would be greater in the absence of the NO_x reductions, if the reductions do not contribute to attainment of the ozone standard or, in an ozone transport region, if the reduction would not produce net benefits [Section 182(f)(1) and (2)].

- EPA, in conjunction with the National Academy of Sciences, will do a study examining the roles of NO_x and VOC emission

reductions, and the extent to which NO_x reductions may be counterproductive in attaining required ozone levels in different areas. The report is due within one year [Section 185B].

- Petition procedure for EPA to determine non-applicability of NO_x requirements after final EPA study submitted to Congress [Section 182(f)(1)-(3)].

i. Milestones

- For serious, severe, and extreme areas, beginning six years after enactment and each three years thereafter, the state must determine whether the 15% and 3% progress requirement (milestone) was met [Section 182(g)(1)].

- The state must demonstrate whether the milestone was met and EPA is to review this demonstration [Section 182(g)(2)].

- Serious and severe areas that fail to meet milestone may "bump up" to the next classification, implement contingency measures, or adopt an economic incentive program [Section 182(g)(3)].

- An economic incentive program must be consistent with rules published by EPA and must be sufficient to meet the next milestone [Section 182(g)(4)].

- An extreme area that fails to meet a milestone must adopt an economic incentive program [Section 182(g)(5)].

Notes

j. Rural Transport Areas

Rural transport areas are defined and subject to marginal area requirements [Section 182(h)].

k. Multi-State Ozone Nonattainment Areas

- o States that share a nonattainment area are required to coordinate SIP's and use photochemical modeling [Section 182(j)(1)].

- o A state that shows that its failure to reach attainment stemmed from actions by another state may be exempt from sanctions [Section 182(j)(2)].

l. Transitional Areas

- o Ozone nonattainment areas that have not violated the NAAQS during 1987-89 are not subject to the requirements of part D until the end of 1991. These areas either become redesignated to attainment, or subject to part D, by 1992, depending on whether air quality has stayed in attainment or has worsened [Section 185A].

m. Ozone Transport

- o On the date of enactment, a northeast ozone transport region was established consisting of eleven states and the District of Columbia. A Commission established as a result of the transport regions reactions shall convene six months after enactment [Section 184(a)].

Notes

- o Each state in an ozone transport region must submit a SIP revision that requires the following:

  - Enhanced I & M for MSA's greater than 100,000 [Section 184(b)(1)(A)].

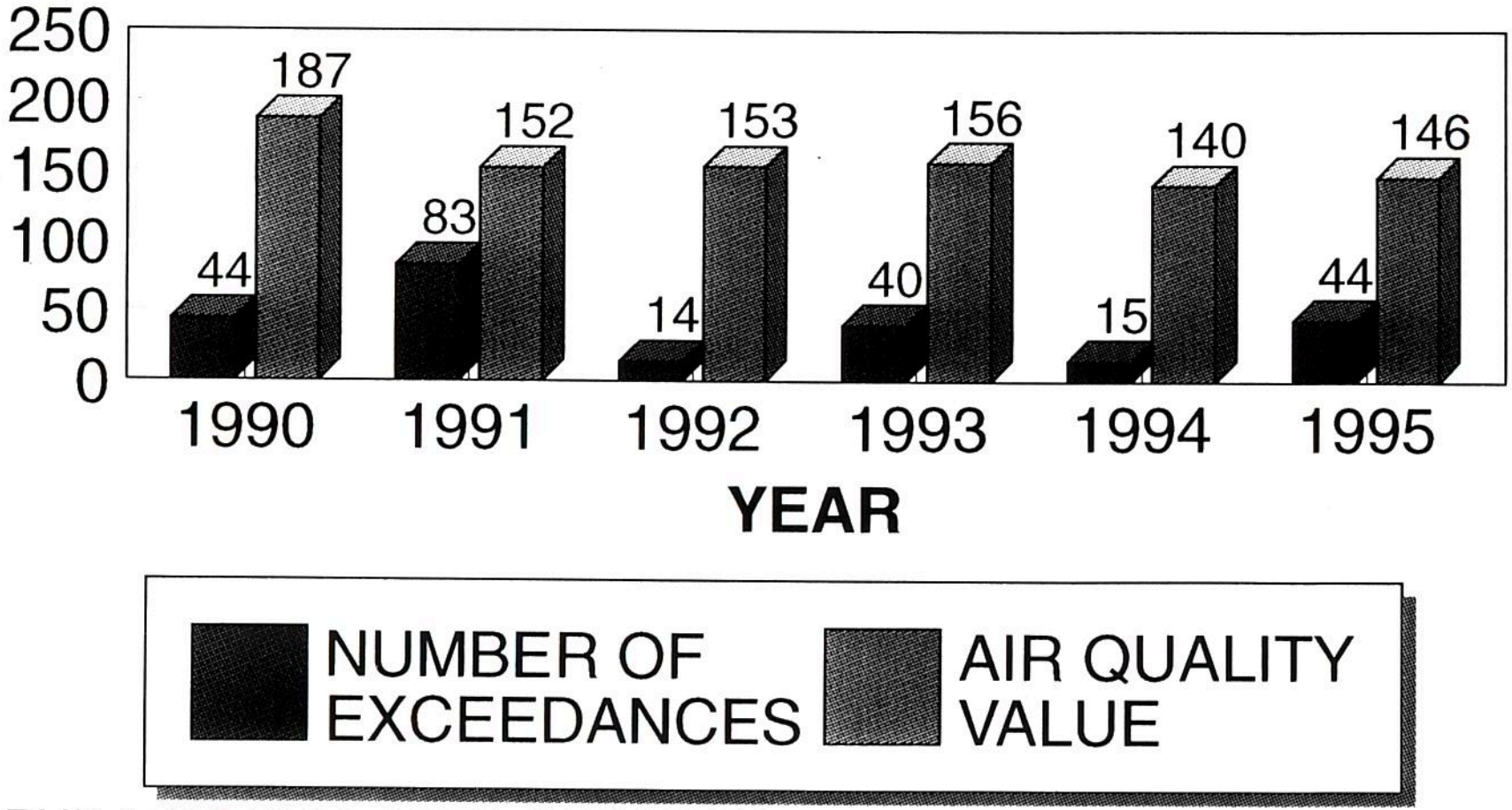
  - RACT on all VOC CTG sources [Section 184(b)(1)(B)].

- o All areas not subject to Stage II under any other provisions are subject to Stage II requirements or their equivalent. EPA must complete a study within three years of enactment to determine control measures capable of achieving reductions comparable to those achieved through Stage II. Within one year of this study's completion, each state within an ozone transport region must revise its SIP to provide for Stage II reductions or comparable measures for marginal and attainment areas [Section 184(b)(2)].

- o The ozone transport commission is authorized to recommend additional control measures. EPA will then take appropriate action, including issuing a SIP call, to require additional control measures [Section 184(c)].

- o EPA is required to set criteria to determine contribution of sources in one area to ozone concentrations in a nonattainment area [Section 184(d)].

OZONE MONITORING DATA
PHILADELPHIA



PHILADELPHIA AREA INCLUDES: DE, MD, NJ, and PA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE EXCEEDANCES and MAXIMUMS SUMMARY

(units: parts per billion)

Site Name	1993 Measured Exceed	1993 Daily Maximums 1st 1-Hr	1993 2nd 1-Hr	1993 3rd 1-Hr	1993 4th 1-Hr	1994 Measured Exceed	1994 Daily Maximums 1st 1-Hr	1994 2nd 1-Hr	1994 3rd 1-Hr	1994 4th 1-Hr	1995 Measured Exceed	1995 Daily Maximums 1st 1-Hr	1995 2nd 1-Hr	1995 3rd 1-Hr	1995 4th 1-Hr
Bristol	**2**	**137**	**129**	**121**	**121**	**2**	**140**	**128**	**113**	**112**	**5**	**162**	**137**	**132**	**127**
Chester	**1**	**129**	**123**	**118**	**118**	**1**	**131**	**118**	**112**	**105**	**2**	**132**	**126**	**124**	**119**
Norristown	**3**	**132**	**130**	**127**	**119**	**0**	**120**	**115**	**110**	**107**	**1**	**125**	**114**	**111**	**107**
Roxborough	2	130	130	120	110	0	120	120	120	110	1	140	120	110	110
NE Philadelphia	**1**	**130**	**120**	**120**	**110**	**1**	**130**	**120**	**110**	**110**	**3**	**140**	**130**	**130**	**120**
Elmwood	2	140	130	120	120	0	120	110	110	110	0	120	120	120	100
Downtown Phila	0	120	110	110	100	0	110	110	110	100	0	120	120	110	100
Alllentown	0	112	104	99	97	0	115	105	103	94	0	110	109	103	98
Bethlehem	0	109	105	104	98	0	119	119	105	102	0	117	116	114	113
Easton	0	113	110	108	104	0	105	105	102	101	0	112	108	106	105
Reading	0	106	105	104	97	1	129	102	99	98	0	124	116	114	106
Kutztown	0	118	110	105	105	1	126	106	96	94	0	118	107	104	100
Scranton	0	112	111	109	104	0	109	106	100	96	0	113	105	104	102
Peckville	0	112	111	110	107	0	106	102	99	97	0	111	110	106	97
Nanticoke	0	107	105	99	98	0	83	83	78	78	0	103	100	96	94
Wilkes Barre	0	119	112	107	105	0	102	100	100	98	0	108	105	101	99
Harrisburg	0	121	118	111	108	0	120	118	106	99	0	110	99	99	97
Hershey	0	112	110	109	105	0	124	122	108	101	0	113	113	110	105
Perry County	0	117	110	108	105	0	108	106	105	102	0	103	103	100	98
Lancaster	1	127	118	114	112	0	116	111	111	110	1	125	124	116	115
York	0	116	112	110	109	0	118	115	99	98	0	118	97	95	94
Williamsport	0	94	88	87	86	0	81	79	79	79	0	94	91	87	85
Altoona	0	104	100	99	97	0	110	106	104	100	0	118	112	103	102
Johnstown	0	107	99	95	94	0	96	94	94	92	0	103	101	100	99
Murrysville	0	123	120	108	106	0	119	118	114	106	3	130	127	125	118
Brighton Twp	0	114	112	111	109	0	109	104	102	101	0	116	104	98	97
Beaver Falls	0	105	99	98	96	0	113	107	106	101	0	108	106	105	103
Hookstown	**	**	**	**	**	**	**	**	**	**	0	105	102	100	99
Florence	**	**	**	**	**	**	**	**	**	**	0	116	104	103	102
Charleroi	0	119	115	108	108	0	115	112	108	104	0	119	116	112	110
Washington	0	115	104	101	101	0	118	115	112	111	0	120	111	107	104
Harrison Twp	**1**	**127**	**121**	**119**	**115**	**1**	**127**	**122**	**113**	**112**	**7**	**147**	**138**	**138**	**133**
Lawrenceville	**0**	**124**	**124**	**119**	**107**	**1**	**131**	**117**	**117**	**116**	**4**	**140**	**137**	**126**	**125**
Penn Hills	0	94	91	88	88	0	109	104	102	100	3	139	133	129	123
South Fayette	0	111	98	96	94	1	125	115	105	105	0	117	117	116	106
New Castle	0	96	95	92	90	0	104	102	93	88	0	123	101	100	97
Farrell	0	110	105	102	98	0	121	111	105	104	0	113	113	111	108
Erie	0	120	107	99	96	0	108	101	99	98	0	121	105	104	102

as of September 10, 1995

How is ozone data gathered?

The Commonwealth of Pennsylvania and Allegheny County Health Department monitor ground-level ozone continuously using the Thermo Environmental Instruments (TECO) Model 49 UV Photometric analyzer. This method of monitoring ozone is designated by the United States Environmental Protection Agency as an equivalent method for the measurement of ambient concentrations of ozone pursuant with the requirements defined in the Code of Federal Regulations, Title 40, Part 53.

The Model 49 analyzer is based on the principle that ozone molecules absorb ultraviolet (UV) light at a specific wavelength. Ozone molecules in this state will radiate light that is measured electronically. The amount of light measured is directly proportional to the ambient ozone concentration. The analyzer employs two detectors that cancel potential interference from other gaseous compounds. The analyzer is capable of measuring concentrations as low as 5 parts per billion (ppb) with 1 ppb precision.

The analyzer is connected to an intelligent data acquisition system which automatically reads the ozone concentration from the analyzer and stores the information. The stored ozone data is then automatically collected by a central computer system. The Commonwealth's system collects data every 5 minutes from the remote sites over dedicated telephone data lines and maintains historical data in Harrisburg. The Commonwealth of Pennsylvania Air Monitoring System (COPAMS) also sends the five minute data averages to our Internet web site at

http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/pollt.html

The TECO Model 49 ozone analyzers operated by the Bureau of Air Quality are extremely reliable and operate with an availability of 99 percent. To ensure accurate data, the analyzers are automatically tested with a known concentration of ozone on a daily basis to check for correct operation. As required by EPA, the analyzers are audited on a yearly basis by an independent quality assurance group within the Bureau of Air Quality.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE EXCEEDANCES and MAXIMUMS SUMMARY

(units: parts per billion)

Site Name	1993 Measured Exceed	1993 Daily Maximums 1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr	1994 Measured Exceed	1994 Daily Maximums 1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr	1995 Measured Exceed	1995 Daily Maximums 1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr
Bristol	**2**	**137**	**129**	**121**	**121**	**2**	**140**	**128**	**113**	**112**	**5**	**162**	**137**	**132**	**127**
Chester	**1**	**129**	**123**	**118**	**118**	**1**	**131**	**118**	**112**	**105**	**2**	**132**	**126**	**124**	**119**
Norristown	**3**	**132**	**130**	**127**	**119**	**0**	**120**	**115**	**110**	**107**	**1**	**125**	**114**	**111**	**107**
Roxborough	2	130	130	120	110	0	120	120	120	110	1	140	120	110	110
NE Philadelphia	**1**	**130**	**120**	**120**	**110**	**1**	**130**	**120**	**110**	**110**	**3**	**140**	**130**	**130**	**120**
Elmwood	2	140	130	120	120	0	120	110	110	110	0	120	120	120	100
Downtown Phila	0	120	110	110	100	0	110	110	110	100	0	120	120	110	100
Alllentown	0	112	104	99	97	0	115	105	103	94	0	110	109	103	98
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Reading	0	106	105	104	97	1	129	102	99	98	0	124	116	114	106
Kutztown	0	118	110	105	105	1	126	106	96	94	0	118	107	104	100
Scranton	0	112	111	109	104	0	109	106	100	96	0	113	105	104	102
Peckville	0	112	111	110	107	0	106	102	99	97	0	111	110	106	97
Nanticoke	0	107	105	99	98	0	83	83	78	78	0	103	100	96	94
Wilkes Barre	0	119	112	107	105	0	102	100	100	98	0	108	105	101	99
Harrisburg	0	121	118	111	108	0	120	118	106	99	0	110	99	99	97
Hershey	0	112	110	109	105	0	124	122	108	101	0	113	113	110	105
Perry County	0	117	110	108	105	0	108	106	105	102	0	103	103	100	98
Lancaster	1	127	118	114	112	0	116	111	111	110	1	125	124	116	115
York	0	116	112	110	109	0	118	115	99	98	0	118	97	95	94
Williamsport	0	94	88	87	86	0	81	79	79	79	0	94	91	87	85
Altoona	0	104	100	99	97	0	110	106	104	100	0	118	112	103	102
Johnstown	0	107	99	95	94	0	96	94	94	92	0	103	101	100	99
Murrysville	0	123	120	108	106	0	119	118	114	106	3	130	127	125	118
Brighton Twp	0	114	112	111	109	0	109	104	102	101	0	116	104	98	97
Beaver Falls	0	105	99	98	96	0	113	107	106	101	0	108	106	105	103
Hookstown	**	**	**	**	**	**	**	**	**	**	0	105	102	100	99
Florence	**	**	**	**	**	**	**	**	**	**	0	116	104	103	102
Charleroi	0	119	115	108	108	0	115	112	108	104	0	119	116	112	110
Washington	0	115	104	101	101	0	118	115	112	111	0	120	111	107	104
Harrison Twp	**1**	**127**	**121**	**119**	**115**	**1**	**127**	**122**	**113**	**112**	**7**	**147**	**138**	**138**	**133**
Lawrenceville	**0**	**124**	**124**	**119**	**107**	**1**	**131**	**117**	**117**	**116**	**4**	**140**	**137**	**126**	**125**
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South Fayette	0	111	98	96	94	1	125	115	105	105	0	117	117	116	106
New Castle	0	96	95	92	90	0	104	102	93	88	0	123	101	100	97
Farrell	0	110	105	102	98	0	121	111	105	104	0	113	113	111	108
Erie	0	120	107	99	96	0	108	101	99	98	0	121	105	104	102

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
OZONE EXCEEDANCES

YEAR

REGION/SITE	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
SOUTHEAST																	
Norristown	29	6	4	7	3	1	0	9	15	0	1	2	1	3	0	1	
Bristol	18	4	9	17	7	9	5	13	13	5	4	9	0	2	2	5	
Chester	26	5	10	7	1	2	4	7	17	2	2	3	0	1	1	2	
Folcroft	0	3	1	7	6	1	5	4	18	0	---	---	---	---	---	---	---
Northeast	14	4	3	14	4	11	3	10	5	0	1	4	0	1	1	3	
Roxborough	8	3	8	14	3	5	3	2	16	2	2	3	0	2	0	1	
Southeast	---	---	1	6	1	1	1	0	3	2	2	1	1	0	0	0	
Totals	95	25	36	72	25	30	21	45	87	11	12	22	2	9	4	12	
SOUTHWEST																	
Charleroi	5	3	0	5	0	1	0	2	6	0	0	0	0	0	0	0	
Midland	1	1	0	1	0	2	0	---	---	---	---	---	---	---	---	---	---
Murrysville	---	---	---	---	---	---	---	---	---	---	---	0	0	0	0	3	
Brighton Twp.	---	---	---	---	---	---	0	2	5	0	0	0	0	0	0	0	
Washington	---	---	---	---	---	1	0	0	4	0	0	0	0	0	0	0	
Beaver Falls	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	
Brackenridge	2	3	1	6	0	0	0	4	13	2	0	---	---	---	---	---	---
Harrison Twp.	---	---	---	---	---	---	---	---	---	---	---	1	0	1	1	7	
Penn Hills	5	4	0	0	0	0	0	1	1	0	0	0	0	0	0	3	
Lawrenceville	6	1	1	0	0	0	0	1	6	1	0	1	0	0	1	4	
South Fayette	0	1	2	0	0	0	0	2	4	2	0	0	0	0	1	0	
Totals	21	13	4	12	0	4	0	12	42	5	0	2	0	1	3	17	
ALLENTOWN																	
Allentown	5	0	1	0	0	0	0	3	6	0	0	1	0	0	0	0	
Bethlehem	8	0	4	10	0	0	0	0	6	0	0	0	0	0	0	0	
Easton	5	0	1	5	3	1	0	3	9	0	0	0	0	0	0	0	
Kutztown	19	4	4	4	0	0	0	1	6	0	0	1	0	0	1	0	
Totals	37	4	10	19	3	1	0	7	27	0	0	2	0	0	1	0	
SCRANTON/WILKES-BARRE																	
Scranton	9	0	4	0	0	0	0	1	8	0	0	2	0	0	0	0	
Wilkes-Barre	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	
Nanticoke	---	---	1	0	0	0	0	0	3	0	0	0	0	0	0	0	
Carbondale	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	
Peckville	---	---	---	---	---	---	---	---	---	---	---	1	0	0	0	0	
Totals	9	0	6	3	0	0	0	1	12	0	0	4	0	0	0	0	

HARRISBURG																	
Harrisburg	1	1	0	5	0	0	0	2	2	0	1	0	0	0	0	0	
Hershey	---	1	0	2	0	0	0	2	4	0	1	0	0	0	0	0	
Perry County	1	1	2	0	0	1	0	0	6	0	0	0	0	0	0	0	
Totals	2	3	2	7	0	1	0	4	12	0	2	0	0	0	0	0	
OTHER																	
York	4	2	0	5	1	1	0	0	4	0	1	0	0	0	0	0	
Lancaster	2	5	1	9	1	0	0	1	3	0	0	0	0	1	0	1	
Reading	4	6	3	6	0	0	0	1	9	0	0	1	0	0	1	0	
New Castle	2	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	
Farrell	---	1	0	2	0	0	1	1	5	0	0	0	0	0	0	0	
Altoona	6	0	2	1	0	0	0	2	4	0	0	0	0	0	0	0	
Williamsport	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Johnstown	9	1	0	0	0	0	0	0	7	0	0	0	0	0	0	0	
Erie	7	4	0	4	0	0	0	1	6	0	0	0	0	0	0	0	
Totals	35	20	6	27	2	2	1	6	41	0	1	1	0	1	1	1	
STATE TOTALS	199	65	64	140	30	38	22	75	221	16	15	31	2	11	9	30	

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
OZONE EXCEEDANCES

YEAR

REGION/SITE	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
SOUTHEAST																	
Norristown	29	6	4	7	3	1	0	9	15	0	1	2	1	3	0	1	
Bristol	18	4	9	17	7	9	5	13	13	5	4	9	0	2	2	5	
Chester	26	5	10	7	1	2	4	7	17	2	2	3	0	1	1	2	
Folcroft	0	3	1	7	6	1	5	4	18	0	---	---	---	---	---	---	---
Northeast	14	4	3	14	4	11	3	10	5	0	1	4	0	1	1	3	
Roxborough	8	3	8	14	3	5	3	2	16	2	2	3	0	2	0	1	
Southeast	---	---	1	6	1	1	1	0	3	2	2	1	1	0	0	0	
Totals	95	25	36	72	25	30	21	45	87	11	12	22	2	9	4	12	
SOUTHWEST																	
Charleroi	5	3	0	5	0	1	0	2	6	0	0	0	0	0	0	0	
Midland	1	1	0	1	0	2	0	---	---	---	---	---	---	---	---	---	---
Murrysville	---	---	---	---	---	---	---	---	---	---	---	0	0	0	0	3	
Brighton Twp.	---	---	---	---	---	---	0	2	5	0	0	0	0	0	0	0	
Washington	---	---	---	---	---	1	0	0	4	0	0	0	0	0	0	0	
Beaver Falls	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	
Brackenridge	2	3	1	6	0	0	0	4	13	2	0	---	---	---	---	---	---
Harrison Twp.	---	---	---	---	---	---	---	---	---	---	---	1	0	1	1	7	
Penn Hills	5	4	0	0	0	0	0	1	1	0	0	0	0	0	0	3	
Lawrenceville	6	1	1	0	0	0	0	1	6	1	0	1	0	0	1	4	
South Fayette	0	1	2	0	0	0	0	2	4	2	0	0	0	0	1	0	
Totals	21	13	4	12	0	4	0	12	42	5	0	2	0	1	3	17	
ALLENTOWN																	
Allentown	5	0	1	0	0	0	0	3	6	0	0	1	0	0	0	0	
Bethlehem	8	0	4	10	0	0	0	0	6	0	0	0	0	0	0	0	
Easton	5	0	1	5	3	1	0	3	9	0	0	0	0	0	0	0	
Kutztown	19	4	4	4	0	0	0	1	6	0	0	1	0	0	1	0	
Totals	37	4	10	19	3	1	0	7	27	0	0	2	0	0	1	0	
SCRANTON/WILKES-BARRE																	
Scranton	9	0	4	0	0	0	0	1	8	0	0	2	0	0	0	0	
Wilkes-Barre	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	
Nanticoke	---	---	1	0	0	0	0	0	3	0	0	0	0	0	0	0	
Carbondale	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	
Peckville	---	---	---	---	---	---	---	---	---	---	---	1	0	0	0	0	
Totals	9	0	6	3	0	0	0	1	12	0	0	4	0	0	0	0	

HARRISBURG																	
Harrisburg	1	1	0	5	0	0	0	2	2	0	1	0	0	0	0	0	
Hershey	---	1	0	2	0	0	0	2	4	0	1	0	0	0	0	0	
Perry County	1	1	2	0	0	1	0	0	6	0	0	0	0	0	0	0	
Totals	2	3	2	7	0	1	0	4	12	0	2	0	0	0	0	0	
OTHER																	
York	4	2	0	5	1	1	0	0	4	0	1	0	0	0	0	0	
Lancaster	2	5	1	9	1	0	0	1	3	0	0	0	0	1	0	1	
Reading	4	6	3	6	0	0	0	1	9	0	0	1	0	0	1	0	
New Castle	2	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	
Farrell	---	1	0	2	0	0	1	1	5	0	0	0	0	0	0	0	
Altoona	6	0	2	1	0	0	0	2	4	0	0	0	0	0	0	0	
Williamsport	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Johnstown	9	1	0	0	0	0	0	0	7	0	0	0	0	0	0	0	
Erie	7	4	0	4	0	0	0	1	6	0	0	0	0	0	0	0	
Totals	35	20	6	27	2	2	1	6	41	0	1	1	0	1	1	1	
STATE TOTALS	199	65	64	140	30	38	22	75	221	16	15	31	2	11	9	30	

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
OZONE EXCEEDANCES

YEAR

REGION/SITE	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
SOUTHEAST																	
Norristown	29	6	4	7	3	1	0	9	15	0	1	2	1	3	0	1	
Bristol	18	4	9	17	7	9	5	13	13	5	4	9	0	2	2	5	
Chester	26	5	10	7	1	2	4	7	17	2	2	3	0	1	1	2	
Folcroft	0	3	1	7	6	1	5	4	18	0	---	---	---	---	---	---	---
Northeast	14	4	3	14	4	11	3	10	5	0	1	4	0	1	1	3	
Roxborough	8	3	8	14	3	5	3	2	16	2	2	3	0	2	0	1	
Southeast	---	---	1	6	1	1	1	0	3	2	2	1	1	0	0	0	
Totals	95	25	36	72	25	30	21	45	87	11	12	22	2	9	4	12	
SOUTHWEST																	
Charleroi	5	3	0	5	0	1	0	2	6	0	0	0	0	0	0	0	
Midland	1	1	0	1	0	2	0	---	---	---	---	---	---	---	---	---	---
Murrysville	---	---	---	---	---	---	---	---	---	---	---	0	0	0	0	3	
Brighton Twp.	---	---	---	---	---	---	0	2	5	0	0	0	0	0	0	0	
Washington	---	---	---	---	---	1	0	0	4	0	0	0	0	0	0	0	
Beaver Falls	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	
Brackenridge	2	3	1	6	0	0	0	4	13	2	0	---	---	---	---	---	---
Harrison Twp.	---	---	---	---	---	---	---	---	---	---	---	1	0	1	1	7	
Penn Hills	5	4	0	0	0	0	0	1	1	0	0	0	0	0	0	3	
Lawrenceville	6	1	1	0	0	0	0	1	6	1	0	1	0	0	1	4	
South Fayette	0	1	2	0	0	0	0	2	4	2	0	0	0	0	1	0	
Totals	21	13	4	12	0	4	0	12	42	5	0	2	0	1	3	17	
ALLENTOWN																	
Allentown	5	0	1	0	0	0	0	3	6	0	0	1	0	0	0	0	
Bethlehem	8	0	4	10	0	0	0	0	6	0	0	0	0	0	0	0	
Easton	5	0	1	5	3	1	0	3	9	0	0	0	0	0	0	0	
Kutztown	19	4	4	4	0	0	0	1	6	0	0	1	0	0	1	0	
Totals	37	4	10	19	3	1	0	7	27	0	0	2	0	0	1	0	
SCRANTON/WILKES-BARRE																	
Scranton	9	0	4	0	0	0	0	1	8	0	0	2	0	0	0	0	
Wilkes-Barre	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	
Nanticoke	---	---	1	0	0	0	0	0	3	0	0	0	0	0	0	0	
Carbondale	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	
Peckville	---	---	---	---	---	---	---	---	---	---	---	1	0	0	0	0	
Totals	9	0	6	3	0	0	0	1	12	0	0	4	0	0	0	0	

HARRISBURG																	
Harrisburg	1	1	0	5	0	0	0	2	2	0	1	0	0	0	0	0	
Hershey	---	1	0	2	0	0	0	2	4	0	1	0	0	0	0	0	
Perry County	1	1	2	0	0	1	0	0	6	0	0	0	0	0	0	0	
Totals	2	3	2	7	0	1	0	4	12	0	2	0	0	0	0	0	
OTHER																	
York	4	2	0	5	1	1	0	0	4	0	1	0	0	0	0	0	
Lancaster	2	5	1	9	1	0	0	1	3	0	0	0	0	1	0	1	
Reading	4	6	3	6	0	0	0	1	9	0	0	1	0	0	1	0	
New Castle	2	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	
Farrell	---	1	0	2	0	0	1	1	5	0	0	0	0	0	0	0	
Altoona	6	0	2	1	0	0	0	2	4	0	0	0	0	0	0	0	
Williamsport	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Johnstown	9	1	0	0	0	0	0	0	7	0	0	0	0	0	0	0	
Erie	7	4	0	4	0	0	0	1	6	0	0	0	0	0	0	0	
Totals	35	20	6	27	2	2	1	6	41	0	1	1	0	1	1	1	
STATE TOTALS	199	65	64	140	30	38	22	75	221	16	15	31	2	11	9	30	

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
OZONE DESIGN VALUES
PARTS PER BILLION

YEAR

REGION/SITE	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
SOUTHEAST																
Norristown	180	178	176	139	134	134	128	146	147	147	147	123	125	127	127	125
Bristol	201	183	176	157	165	167	165	153	169	169	168	138	137	137	128	137
Chester	177	170	166	157	157	157	134	137	167	187	187	135	125	125	121	126
Folcroft	160	160	128	142	142	151	144	147	173	173	--	--	--	--	--	--
Northeast	180	170	170	160	160	160	150	150	150	150	140	130	130	130	120	130
Roxborough	160	160	160	160	160	160	150	150	150	150	150	130	130	130	120	120
Southeast	170	--	--	150	150	160	120	120	130	140	140	130	130	120	110	--
Elmwood	--	--	--	--	--	--	--	--	--	--	--	--	--	120	120	120
Downtown Phila.	--	--	--	--	--	--	--	--	--	--	--	--	--	100	110	110
SOUTHWEST																
Charleroi	133	141	131	134	130	132	108	122	127	127	127	108	108	115	112	115
Midland	120	120	107	107	107	122	109	--	--	--	--	--	--	--	--	--
Murrysville	--	--	--	--	--	--	--	--	--	--	--	99	103	108	118	123
righton Twp.	--	--	--	--	--	--	103	110	141	141	135	110	110	111	110	109
Washington	--	--	--	--	--	103	116	117	128	128	128	104	104	104	112	115
Beaver Falls	151	120	105	105	105	105	105	110	124	124	124	107	108	107	106	106
Brackenridge	125	132	132	138	137	140	120	133	149	149	149	--	--	--	--	--
Harrison Twp.	--	--	--	--	--	--	--	--	--	--	--	118	113	119	121	133
Penn Hills	170	141	141	127	120	120	120	120	120	120	120	110	109	105	103	123
Lawrenceville	174	167	148	120	120	120	120	120	128	129	129	119	114	118	119	126
South Fayette	120	120	125	125	120	120	120	120	142	142	142	105	99	101	105	116
ALLENTOWN																
Allentown	145	145	137	122	121	114	108	123	137	137	133	116	116	113	104	109
Bethlehem	177	154	149	143	143	137	120	120	137	137	137	102	100	107	105	116
Easton	149	127	142	135	136	135	125	125	134	134	134	115	115	115	108	108
Kutztown	170	155	150	144	134	125	110	111	137	137	137	118	118	118	106	110
SCRANTON/WILKES-BARRE																
Scranton	148	145	151	125	126	107	103	103	129	129	129	110	109	111	109	109
Wilkes-Barre	115	113	112	124	124	124	97	95	116	116	117	114	114	112	105	107
Nanticoke	--	--	97	103	103	104	101	108	124	124	124	102	102	106	98	100
Carbondale	--	--	99	102	105	103	103	105	118	118	118	108	106	106	--	--
Peckville	--	--	--	--	--	--	--	--	--	--	--	--	--	117	107	110
HARRISBURG																
Harrisburg	141	116	120	133	129	129	109	122	128	128	118	110	110	111	118	118
Hershey	--	--	112	120	115	115	113	122	136	136	131	118	113	110	110	113
Perry County	--	129	128	122	109	108	105	107	128	128	128	102	102	108	108	108

OTHER

York	162	137	137	130	127	128	113	113	129	129	129	119	109	108	112	115
Lancaster	146	143	143	147	137	134	110	121	125	125	122	113	117	118	116	118
Reading	170	170	140	138	134	128	117	121	141	141	141	117	117	116	105	114
New Castle	109	124	124	111	110	96	93	100	122	122	122	101	100	99	96	101
Farrell	--	115	118	119	113	111	106	120	134	134	128	105	105	106	106	111
Altoona	--	159	163	114	114	113	98	113	129	129	129	106	113	105	104	106
Williamsport	--	116	116	117	115	107	98	98	112	112	112	92	93	94	88	88
Johnstown	139	139	139	108	107	107	105	111	133	133	133	109	108	107	95	100
Erie	159	144	139	130	130	130	109	112	128	128	128	113	105	107	107	107

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
OZONE DESIGN VALUES
PARTS PER BILLION

YEAR

REGION/SITE	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
SOUTHEAST																
Norristown	180	178	176	139	134	134	128	146	147	147	147	123	125	127	127	125
Bristol	201	183	176	157	165	167	165	153	169	169	168	138	137	137	128	137
Chester	177	170	166	157	157	157	134	137	167	187	187	135	125	125	121	126
Folcroft	160	160	128	142	142	151	144	147	173	173	--	--	--	--	--	--
Northeast	180	170	170	160	160	160	150	150	150	150	140	130	130	130	120	130
Roxborough	160	160	160	160	160	160	150	150	150	150	150	130	130	130	120	120
Southeast	170	--	--	150	150	160	120	120	130	140	140	130	130	120	110	--
Elmwood	--	--	--	--	--	--	--	--	--	--	--	--	--	120	120	120
Downtown Phila.	--	--	--	--	--	--	--	--	--	--	--	--	--	100	110	110
SOUTHWEST																
Charleroi	133	141	131	134	130	132	108	122	127	127	127	108	108	115	112	115
Midland	120	120	107	107	107	122	109	--	--	--	--	--	--	--	--	--
Murrysville	--	--	--	--	--	--	--	--	--	--	--	99	103	108	118	123
Brighton Twp.	--	--	--	--	--	--	103	110	141	141	135	110	110	111	110	109
Washington	--	--	--	--	--	103	116	117	128	128	128	104	104	104	112	115
Beaver Falls	151	120	105	105	105	105	105	110	124	124	124	107	108	107	106	106
Brackenridge	125	132	132	138	137	140	120	133	149	149	149	--	--	--	--	--
Harrison Twp.	--	--	--	--	--	--	--	--	--	--	--	118	113	119	121	133
Penn Hills	170	141	141	127	120	120	120	120	120	120	120	110	109	105	103	123
Lawrenceville	174	167	148	120	120	120	120	120	128	129	129	119	114	118	119	126
South Fayette	120	120	125	125	120	120	120	120	142	142	142	105	99	101	105	116
ALLENTOWN																
Allentown	145	145	137	122	121	114	108	123	137	137	133	116	116	113	104	109
Bethlehem	177	154	149	143	143	137	120	120	137	137	137	102	100	107	105	116
Easton	149	127	142	135	136	135	125	125	134	134	134	115	115	115	108	108
Kutztown	170	155	150	144	134	125	110	111	137	137	137	118	118	118	106	110
SCRANTON/WILKES-BARRE																
Scranton	148	145	151	125	126	107	103	103	129	129	129	110	109	111	109	109
Wilkes-Barre	115	113	112	124	124	124	97	95	116	116	117	114	114	112	105	107
Nanticoke	--	--	97	103	103	104	101	108	124	124	124	102	102	106	98	100
Carbondale	--	--	99	102	105	103	103	105	118	118	118	108	106	106	--	--
Peckville	--	--	--	--	--	--	--	--	--	--	--	--	--	117	107	110
HARRISBURG																
Harrisburg	141	116	120	133	129	129	109	122	128	128	118	110	110	111	118	118
Hershey	--	--	112	120	115	115	113	122	136	136	131	118	113	110	110	113
Perry County	--	129	128	122	109	108	105	107	128	128	128	102	102	108	108	108

OTHER

York	162	137	137	130	127	128	113	113	129	129	129	119	109	108	112	115
Lancaster	146	143	143	147	137	134	110	121	125	125	122	113	117	118	116	118
Reading	170	170	140	138	134	128	117	121	141	141	141	117	117	116	105	114
New Castle	109	124	124	111	110	96	93	100	122	122	122	101	100	99	96	101
Farrell	--	115	118	119	113	111	106	120	134	134	128	105	105	106	106	111
Altoona	--	159	163	114	114	113	98	113	129	129	129	106	113	105	104	106
Williamsport	--	116	116	117	115	107	98	98	112	112	112	92	93	94	88	88
Johnstown	139	139	139	108	107	107	105	111	133	133	133	109	108	107	95	100
Erie	159	144	139	130	130	130	109	112	128	128	128	113	105	107	107	107

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
OZONE DESIGN VALUES
PARTS PER BILLION

YEAR

REGION/SITE	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
SOUTHEAST																
Norristown	180	178	176	139	134	134	128	146	147	147	147	123	125	127	127	125
Bristol	201	183	176	157	165	167	165	153	169	169	168	138	137	137	128	137
Chester	177	170	166	157	157	157	134	137	167	187	187	135	125	125	121	126
Folcroft	160	160	128	142	142	151	144	147	173	173	--	--	--	--	--	--
Northeast	180	170	170	160	160	160	150	150	150	150	140	130	130	130	120	130
Roxborough	160	160	160	160	160	160	150	150	150	150	150	130	130	130	120	120
Southeast	170	--	--	150	150	160	120	120	130	140	140	130	130	120	110	--
Elmwood	--	--	--	--	--	--	--	--	--	--	--	--	--	120	120	120
Downtown Phila.	--	--	--	--	--	--	--	--	--	--	--	--	--	100	110	110
SOUTHWEST																
Charleroi	133	141	131	134	130	132	108	122	127	127	127	108	108	115	112	115
Midland	120	120	107	107	107	122	109	--	--	--	--	--	--	--	--	--
Murrysville	--	--	--	--	--	--	--	--	--	--	--	99	103	108	118	123
righton Twp.	--	--	--	--	--	--	103	110	141	141	135	110	110	111	110	109
Washington	--	--	--	--	--	103	116	117	128	128	128	104	104	104	112	115
Beaver Falls	151	120	105	105	105	105	105	110	124	124	124	107	108	107	106	106
Brackenridge	125	132	132	138	137	140	120	133	149	149	149	--	--	--	--	--
Harrison Twp.	--	--	--	--	--	--	--	--	--	--	--	118	113	119	121	133
Penn Hills	170	141	141	127	120	120	120	120	120	120	120	110	109	105	103	123
Lawrenceville	174	167	148	120	120	120	120	120	128	129	129	119	114	118	119	126
South Fayette	120	120	125	125	120	120	120	120	142	142	142	105	99	101	105	116
ALLENTOWN																
Allentown	145	145	137	122	121	114	108	123	137	137	133	116	116	113	104	109
Bethlehem	177	154	149	143	143	137	120	120	137	137	137	102	100	107	105	116
Easton	149	127	142	135	136	135	125	125	134	134	134	115	115	115	108	108
Kutztown	170	155	150	144	134	125	110	111	137	137	137	118	118	118	106	110
SCRANTON/WILKES-BARRE																
Scranton	148	145	151	125	126	107	103	103	129	129	129	110	109	111	109	109
Wilkes-Barre	115	113	112	124	124	124	97	95	116	116	117	114	114	112	105	107
Nanticoke	--	--	97	103	103	104	101	108	124	124	124	102	102	106	98	100
Carbondale	--	--	99	102	105	103	103	105	118	118	118	108	106	106	--	--
Peckville	--	--	--	--	--	--	--	--	--	--	--	--	--	117	107	110
HARRISBURG																
Harrisburg	141	116	120	133	129	129	109	122	128	128	118	110	110	111	118	118
Hershey	--	--	112	120	115	115	113	122	136	136	131	118	113	110	110	113
Perry County	--	129	128	122	109	108	105	107	128	128	128	102	102	108	108	108

OTHER

York	162	137	137	130	127	128	113	113	129	129	129	119	109	108	112	115
Lancaster	146	143	143	147	137	134	110	121	125	125	122	113	117	118	116	118
Reading	170	170	140	138	134	128	117	121	141	141	141	117	117	116	105	114
New Castle	109	124	124	111	110	96	93	100	122	122	122	101	100	99	96	101
Farrell	--	115	118	119	113	111	106	120	134	134	128	105	105	106	106	111
Altoona	--	159	163	114	114	113	98	113	129	129	129	106	113	105	104	106
Williamsport	--	116	116	117	115	107	98	98	112	112	112	92	93	94	88	88
Johnstown	139	139	139	108	107	107	105	111	133	133	133	109	108	107	95	100
Erie	159	144	139	130	130	130	109	112	128	128	128	113	105	107	107	107

Description of Ozone Monitoring in Southeastern Pennsylvania

In 1996, the Department of Environmental Protection (DEP) and Philadelphia Air Management Services (AMS) will operate a total of eight (8) continuous ambient ozone monitors in Southeastern Pennsylvania. Since ozone is not directly emitted into the atmosphere but results from complex photochemical reactions, there tends to be large separations between sources of ozone precursors and the areas of high ozone concentrations. The network design for ozone should therefore take into account the meteorological transport process, especially in trying to measure peak concentration levels. The placement of the ozone sites in Southeastern Pennsylvania attempt to measure ozone levels which are representative of the Philadelphia urban subregion with dimensions of between 500 meter to 4 kilometers (neighborhood scale). Neighborhood scale sites provide data for developing, testing, and revising concepts and models that describe urban/regional concentration patterns. They are also useful in understanding the process of ozone transport. Under stagnation conditions, these stations may also experience peak concentration levels within the urban areas.

The eight (8) ground-level ambient ozone monitoring sites are designated as part of the State and Local Air Monitoring Stations (SLAMS) network. The network of stations were designed to meet the basic monitoring objectives of the State Implementation Plan (SIP) which are:

- determine the highest concentrations expected to occur in the area
- determine representative concentrations in areas of high population density
- determine the impact on ambient pollution levels of sources
- determine general background concentration levels

A subset of the SLAMS network, are sites designated as National Air Monitoring Stations (NAMS). The NAMS monitors are used by EPA to determine national air quality trends. The requirement to have a SLAMS ozone monitor designated as a NAMS ozone monitor is necessary only for those urbanized areas having a population of more than 200,000. The NAMS site so designated should be representative of high density population areas on the fringes of the central business district (in this case downtown Philadelphia) along the predominate summer daytime wind direction. The predominate wind direction in the summer, especially during stagnation periods, is from the south to southwest. The AMS ozone monitoring site located to the northeast of the Philadelphia central business district (Northeast Philadelphia Airport) has been designated as the urban area NAMS site. The remaining seven sites are designated as SLAMS.

The DEP sites were located with the following objectives:

Bristol - measure ozone transport levels downwind of Philadelphia
Chester - measure ozone transport levels transported from Delaware and Maryland
Norristown - measure ozone levels entering Philadelphia from western Pennsylvania

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Criteria for Valid Monitoring Data

- For values less than the standard:
- Daily maximum considered valid if monitor data are available for 75% of the hours between 9 a.m. and 9 p.m. (i.e., a total of 9 hours in this period)
- Daily maximum considered invalid or missing if monitor data are available for less than 75% of the hours between 9 a.m. and 9 p.m.

How Compliance with Standard is Measured

- Three year period of evaluation
- Calculation of average annual ozone exceedances per monitor
- Calculation of average annual expected exceedances per monitor
- Determine design value for each monitor
- Look at max values in nonattainment area

Key Ingredients in Design Value Calculation

- Evaluate monitor data over a consecutive three-year period
- Determine 4 highest hourly maxima for each year
- Calculate percentage of valid monitoring days per season
- Design value is 4th highest maxima over the three years (assuming all years are valid)

Expected Exceedance Calculation

- $e = v + [(v/n) * (N - n - z)]$

Expected Exceedance Calculation (cont'd)

- e = expected number of exceedances
- v = no. of days with maxima exceeding standard
- n = no. of days with valid maxima
- N = no. of days in ozone season
- z = no. of days with max assumed < std

Original Calculation for Classifying Philadelphia as Severe

Philadelphia's Nonattainment Designation

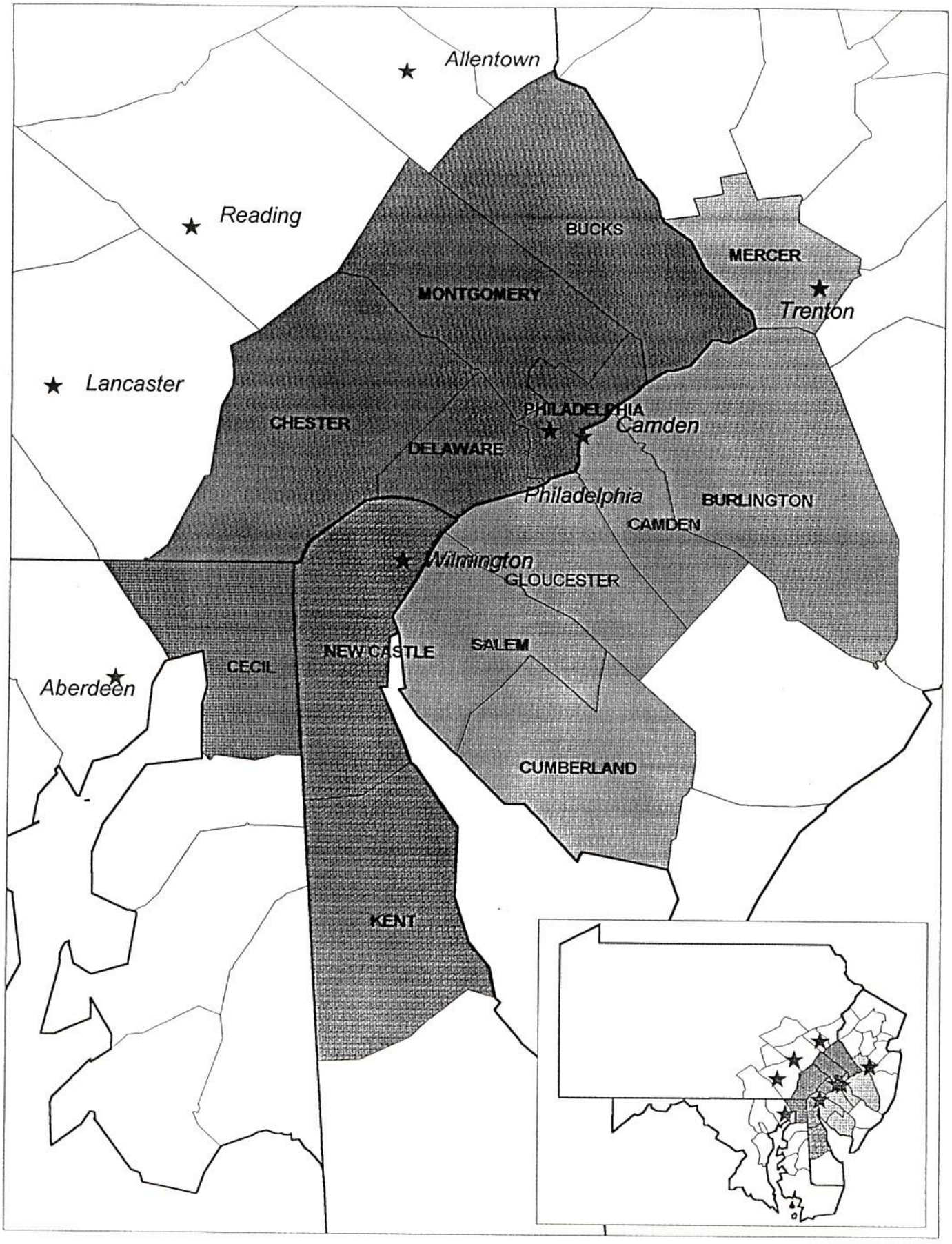
- Philadelphia area classified as a severe nonattainment area
- Period of evaluation was 1987 to 1989
- Design value for this period: 187 ppb
- Average exceedances per year: 8.7
- Average expected exceedances per year: 8.8

Philadelphia's Current Status

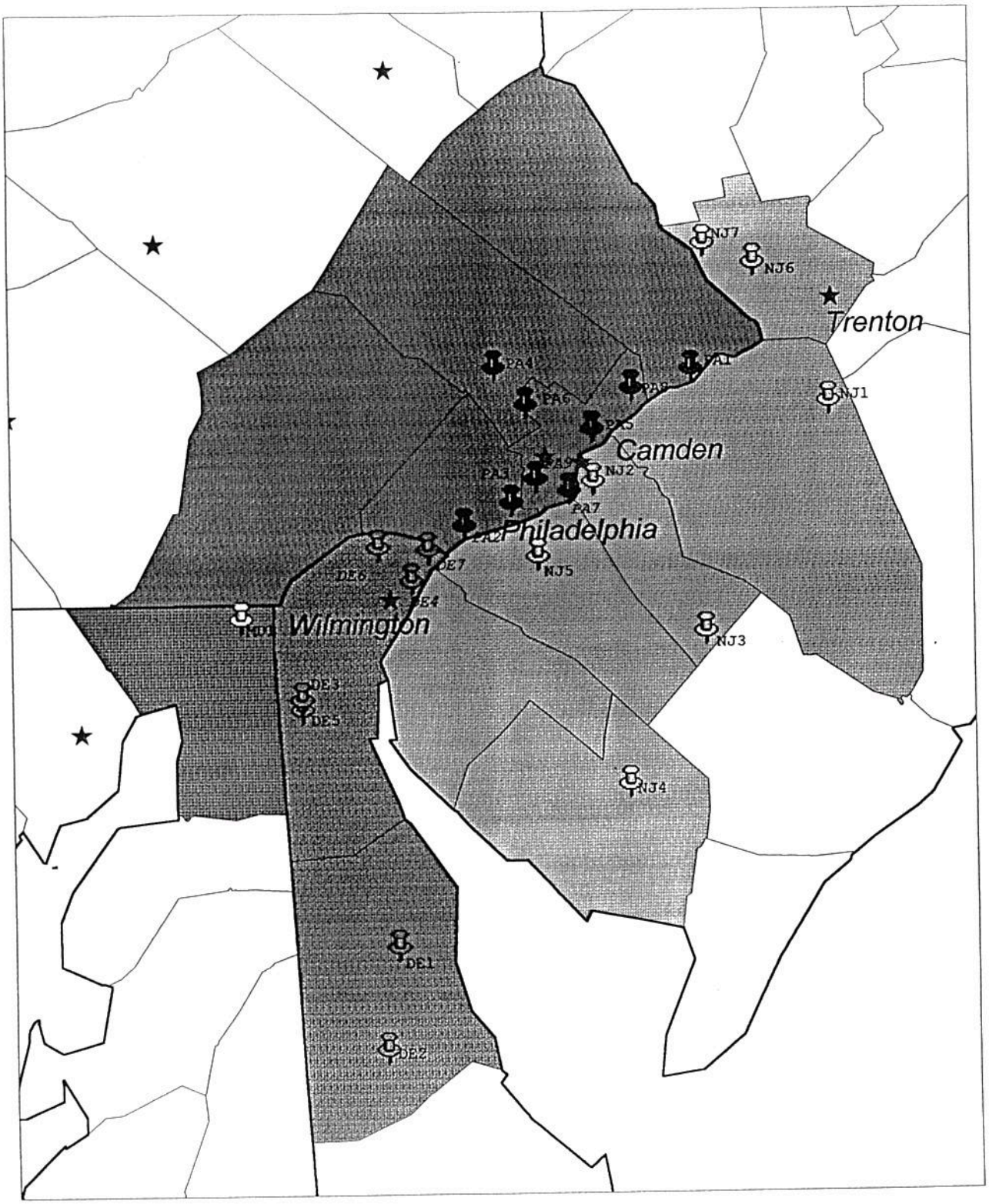
- Design value from 1993 to 1995: 146 ppb
- Average number of exceedances per year: 3.3
- Average number of expected exceedances per year: 3.5

Example Calculation Including 1995

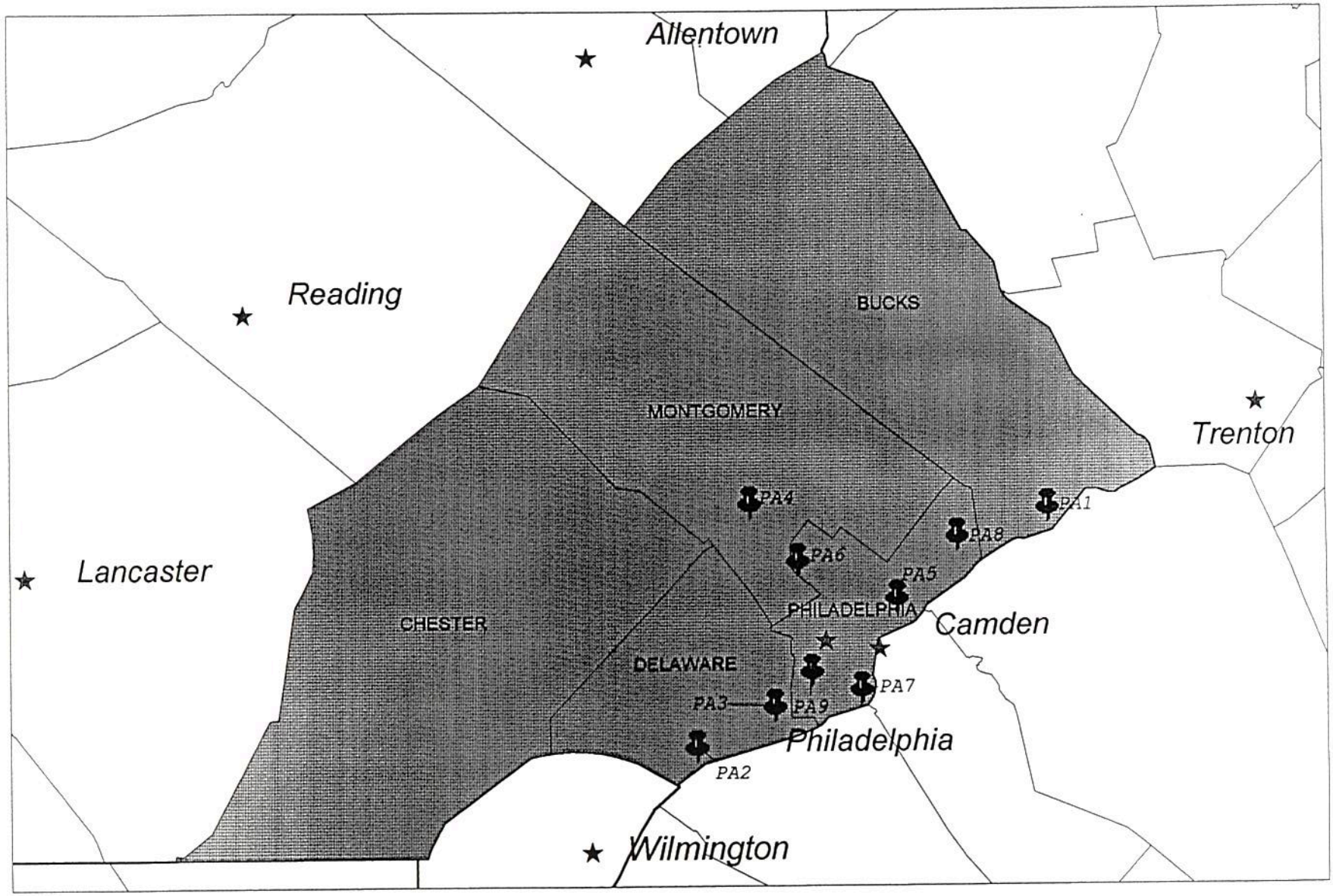
Philadelphia Nonattainment Area



Monitoring Sites for the Philadelphia Nonattainment Area



Pennsylvania Monitoring Sites in Philadelphia Nonattainment Area



Philadelphia Nonattainment Area
Ozone Monitoring Data Summary
1987 - 1989

Site Name	Average Number of Exceedances	Average Number of Expected Exceedances	Design Value (ppb)	Years of Complete Monitoring
Dover (DE1)	4.3	4.6	150	3
Lums Pond State Park (DE3)	6.7	9.6	180	2
Bellefonte (DE4)	7.3	8.6	150	3
Claymont (DE7)	7.7	8.8	160	3
Burlington Co. (NJ1)	7.3	7.7	155	3
Camden (NJ2)	15.3	15.6	177	3
Ancora (NJ3)	12.3	12.6	165	3
Millville (NJ4)	7.0	7.2	149	3
Clarksboro (NJ5)	11.0	11.3	169	3
Lawrence Township (NJ6)	12.3	12.5	169	3
Washington Crossing State Park (NJ7)	3.0	3.0	141	1
Bristol (PA1)	10.3	10.7	169	3
Chester (PA2)	8.7	8.8	187	3
Folcroft (PA3)	7.0	7.0	173	3
Norristown (PA4)	8.0	8.4	147	3
Roxborough (PA6)	7.7	8.6	160	2
Southeast (PA7)	1.7	3.5	140	1
Northeast (PA8)	5.3	8.6	150	1
Overall	8.7	8.8	187	

Philadelphia Nonattainment Area
Ozone Monitoring Data Summary
1993 - 1995

Site Name	Average Number of Exceedances	Average Number of Expected Exceedances	Design Value (ppb)	Years of Complete Monitoring
Dover (DE1)	0.5	0.5	107	2
Kent Co. (DE2)	2.0	2.2	137	1
Bellefonte (DE4)	2.3	2.4	137	3
Lums Pond State Park (DE5)	4.0	4.0	139	3
Brandywine Creek State Park (DE6)	1.5	1.6	130	1
Claymont (DE7)	0.0	0.0	116	1
Fair Hill (MD1)	3.3	3.5	146	3
Camden (NJ2)	1.0	1.0	123	3
Ancora (NJ3)	4.0	4.1	138	3
Millville (NJ4)	0.7	0.7	121	3
Clarksboro (NJ5)	2.3	2.4	127	3
Lawrence Township (NJ6)	4.3	4.3	135	3
Bristol (PA1)	3.0	3.1	137	3
Chester (PA2)	1.3	1.3	126	3
Norristown (PA4)	1.3	1.4	125	3
Downtown Philadelphia (PA5)	0.0	0.0	120	2
Roxborough (PA6)	1.0	1.0	120	3
Southeast (PA7)	0.0	0.0	110	1
Northeast (PA8)	1.7	1.7	130	3
Elmwood (PA9)	0.7	1.0	120	2
Overall	3.3	3.5	146	

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

Bristol Monitor (PA1)

Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
87	93%	177	156	151	150	13	13.7
88	96%	205	183	169	168	13	13.3
89	99%	152	135	131	128	5	5
90	99%	153	132	132	131	4	4
91	97%	144	138	137	129	9	9.1
92	98%	119	117	111	108	0	0
93	97%	137	129	121	121	2	2
94	96%	140	128	113	112	2	2.1
95	96%	162	137	132	127	5	5.2

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

Chester Monitor (PA2)

Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
87	93%	157	137	130	130	7	7.5
88	99%	208	193	189	154	17	17
89	99%	187	126	118	118	2	2
90	100%	149	138	118	117	2	2
91	100%	135	125	125	120	3	3
92	98%	121	109	99	96	0	0
93	100%	129	123	118	118	1	1
94	99%	131	118	112	105	1	1
95	98%	132	126	124	115	2	2

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

Folcroft Monitor (PA3)

Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
87	99%	153	150	138	128	4	4
88	100%	206	189	182	173	17	17.1
89	98%	123	116	115	114	0	0

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

Roxborough Monitor (PA6)

Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
87	84%	160	150	130	120	3	3.6
88	98%	210	200	150	150	18	18.2
89	51%	130	130	100	100	2	3.9
90	95%	140	130	120	110	2	2.1
91	96%	140	130	130	120	3	3.1
92	98%	120	110	110	100	0	0
93	95%	130	130	120	110	2	2.1
94	98%	120	120	120	110	0	0
95	95%	140	120	110	110	1	1

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

Bellefonte Monitor (DE4)

Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
87	93%	150	140	130	130	6	6.2
88	79%	210	190	160	150	15	18.4
89	80%	150	120	120	110	1	1.1
90	90%	145	140	137	127	4	4.3
91	92%	156	135	126	124	3	3.3
92	98%	135	124	116	109	1	1
93	100%	141	137	122	116	2	2
94	99%	122	117	108	108	0	0
95	96%	145	141	134	132	5	5.2

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

Fair Hill Monitor (MD1)

Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
92	96%	126	117	110	108	1	1
93	95%	156	147	142	131	5	5.2
94	99%	136	115	114	114	1	1
95	93%	163	146	140	138	4	4.3

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

Camden Monitor (NJ2)

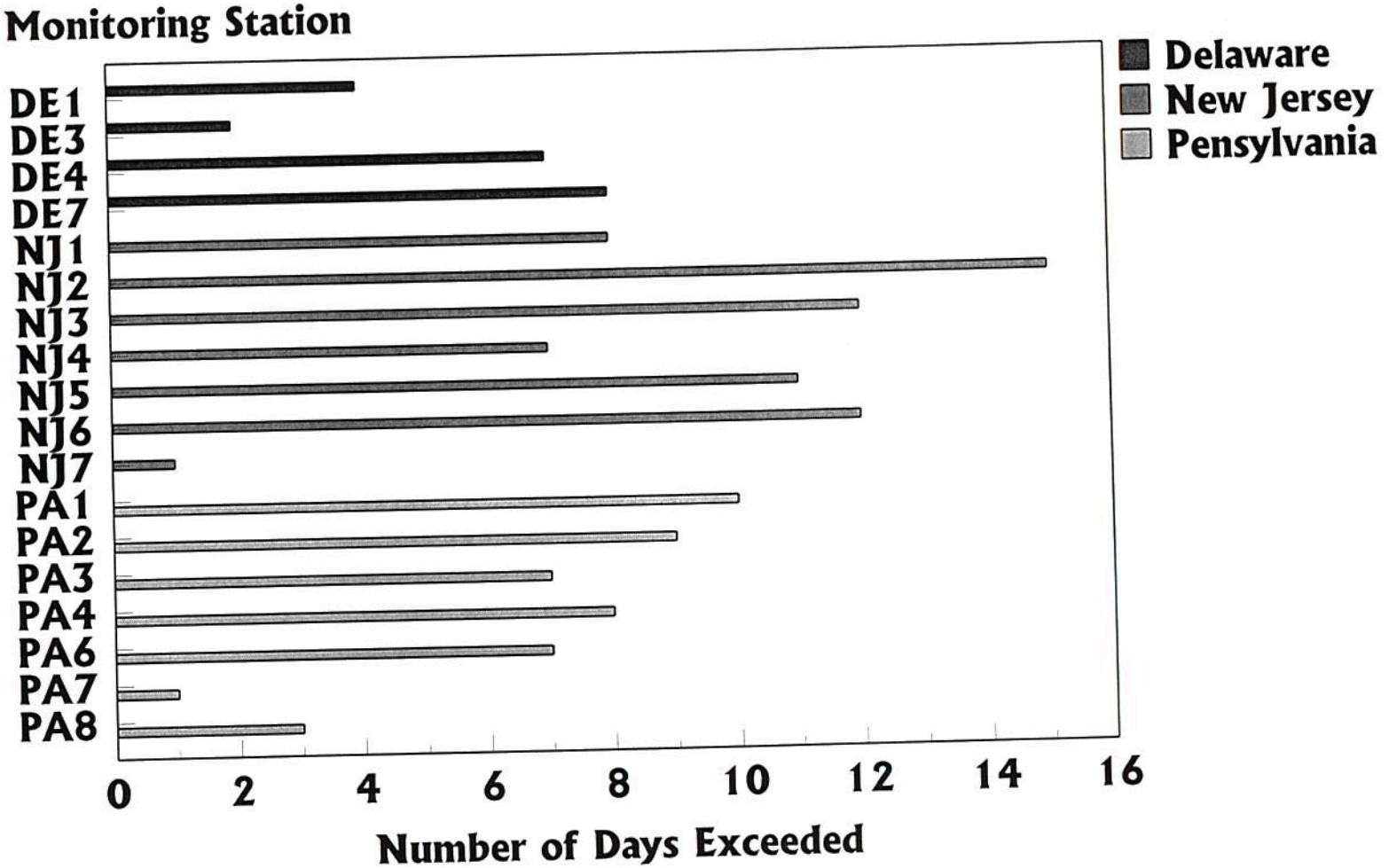
Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
87	98%	211	177	165	151	23	23.2
88	96%	195	187	175	167	21	21.6
89	98%	129	127	124	118	2	2
90	98%	141	136	123	121	2	2
91	99%	148	138	138	131	6	6
92	97%	125	104	101	98	1	1
93	100%	120	115	113	112	0	0
94	100%	123	110	110	109	0	0
95	100%	154	132	127	120	3	3

Philadelphia Nonattainment Area
Site-Level Monitoring Summary

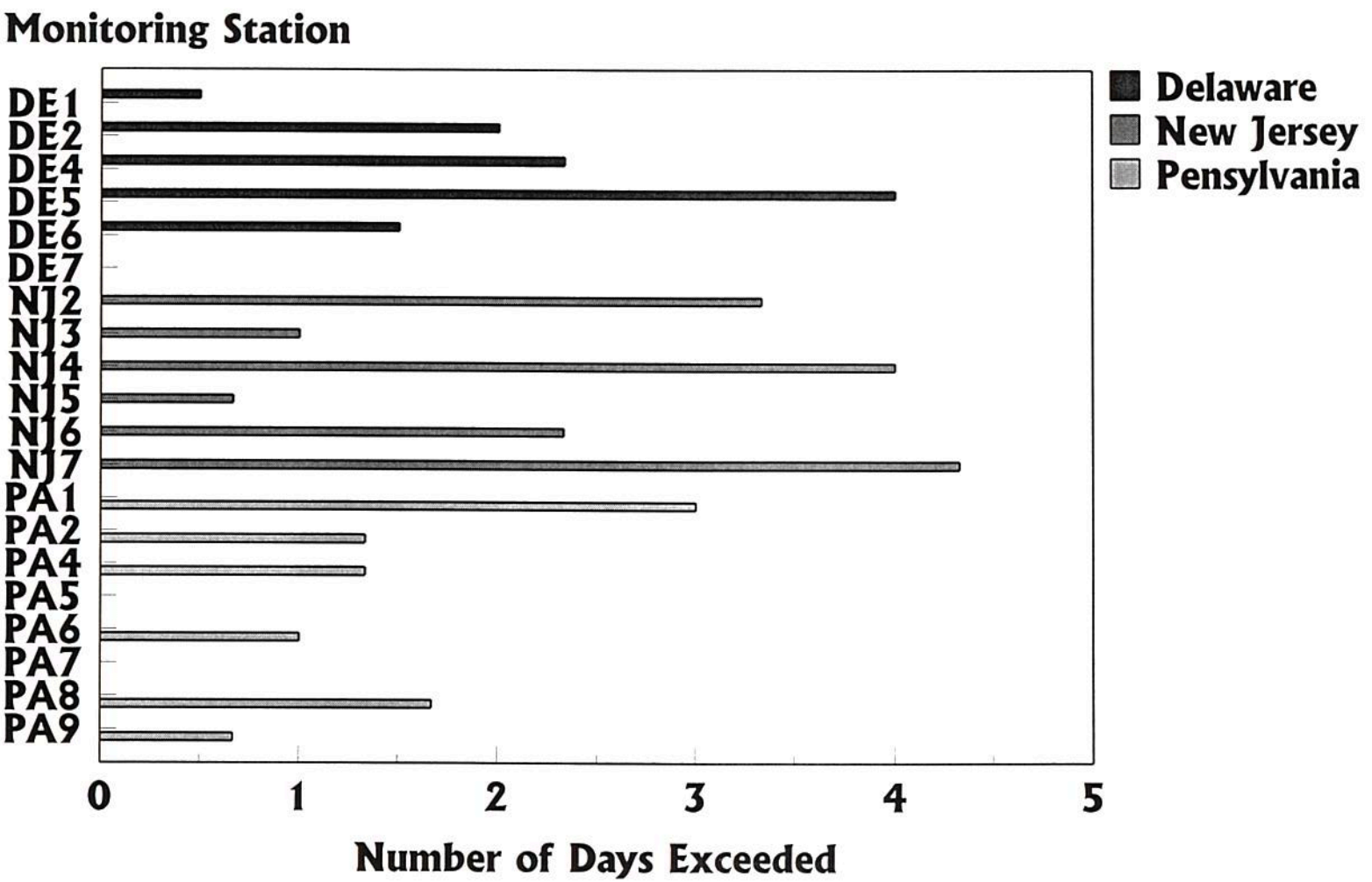
Ancora Monitor (NJ3)

Year	% Season Monitored	Max	2nd Hi	3rd Hi	4th Hi	Exceedances	Expected Exceedances
87	91%	169	165	142	142	9	9.6
88	99%	179	172	163	154	23	23
89	96%	163	143	134	130	5	5.2
90	98%	158	142	136	134	5	5
91	98%	149	146	142	141	5	5.1
92	96%	161	119	103	101	1	1
93	97%	158	140	138	137	9	9.3
94	96%	135	117	115	107	1	1
95	99%	140	138	114	112	2	2

Philadelphia Nonattainment Area
Number of Days of Ozone Exceedances by Monitor
1987 - 1989 (Average per Year)



Philadelphia Nonattainment Area
Number of Days of Ozone Exceedances by Monitor
1993 - 1995 (Average per Year)



Philadelphia Nonattainment Area
Number of Ozone Exceedances by Year
1987 - 1995